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EXAMINER
CARROLL, J

E5M1/0921

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ART UNIT	PAPER NUMBER
2508	4

DATE MAILED: 09/21/93

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

■ This application has been examined. ■ Responsive to communication filed on 02 Jul 93. ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), 0 days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ■ Notice of References Cited by Examiner, PTO-892.
2. ■ Notice re Patent Drawing, PTO-948.
3. ☐ Notice of Art Cited by Applicant, PTO-1449.
4. ☐ Notice of Informal Patent Application, Form PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____

Part II SUMMARY OF ACTION

1. ■ Claims 17 to 29 are pending in the application.
   Of the above, claims _____ are withdrawn from consideration.
2. ■ Claims 1 to 16 have been cancelled.
3. ☐ Claims _____ are allowed.
4. ■ Claims 17 to 29 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable. ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed on _____, has been ☐ approved. ☐ disapproved (see explanation).
12. ☐ Acknowledgment is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

We have entered as Paper No. 3 the Preliminary Amendment FILED 02 July 1993 under 37 C.F.R. 1.60.

The Official Draftsperson objects to the drawings as per PTO FORM 948, enclosed herewith.

We further object to Figures 11 and 12 as being self-inconsistent with regard to the horizontal distance scale and particularly to dimensions indicated within the body of the figures. In Figure 11, for example, t epi = 6.0 microns is inconsistent with the horizontal scale suggesting 7.0 microns instead. We therefore request clarification in response to this Office action.

We still further object to the figures under 37 C.F.R. 1.83(a) because they do not show every feature of the Invention defined by Claim 28 requiring

"an open cell configuration".

Figure 8 shows a DMOS transistor cell having a closed hexagonal cell configuration. The open cell configuration of Figure 2 corresponds to the prior art devised by Matsushita of JAPAN and General Electric of the UNITED STATES.

In response to this Office action we therefore require either a showing in the figures of the Invention defined by Claim 28 but without further introducing new matter prohibited under 35 U.S.C. 132, discussed infra, or we require deletion of the excerpt supra from the claimed subject matter.

Consistent with the disclosure we request that a "PRIOR ART" label be shown with Figures 1 to 7.

Under 37 C.F.R. 1.71 we object to the Specification as being self-inconsistent. On page 18, more particularly, the sentence beginning on line 23 indicates Figure 22A is associated with cross section X1-X2 whereas Figure 22A indicates X1'-X2' instead. Similarly, page 18 indicates that Figure 22B is associated with X1'-X2' whereas Figure 22B indicates X1-X2 instead. Further similarly, page 23 indicates that Figure 29B is associated with plane X1'-X2' whereas Figure 29B indicates X1-X2 instead. We therefore request clarification in response to this Office action.

Claims 17 to 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the Invention.

Claim 17 is vague and indefinite because there is no antecedent basis for

"the surface of said substrate"

recited on claim line 4.

Claims 18 to 29 are vague and indefinite because of their dependency upon vague and indefinite Claim 17 discussed supra.

Vague and indefinite Claim 29 is further vague and indefinite because there is no antecedent basis for

"the dopant concentration of said epitaxial layer outside of said body and source regions".

Under the first paragraph of 35 U.S.C. 112, excerpted infra, we further object to the Specification because its disclosure

provides no basis whatsoever for the Invention defined by Claim 28 requiring a trench DMOS transistor cell to have

"an open cell configuration",

as amply discussed supra under 37 C.F.R. 1.83(a). We thus conclude that the claimed "open cell configuration" is new matter not originally disclosed. We further conclude that the Applicants did not possess the open cell configuration at the time the Invention was made.

The following is a quotation of the first paragraph of 35 U.S.C. 112.

> "The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set for the best mode contemplated by the inventor of carrying out this invention."

Vague and indefinite Claim 28 is rejected under 35 U.S.C. 112, first paragraph, as set forth supra in the objection to the Specification, because the claim is based upon a disclosure that not only provides no description of the Invention, but also provides no enabling method of manufacture.

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action.

> "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject

> matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> "Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person."

This Application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103, we presume that the subject matters of the various claims were commonly owned at the time any inventions covered therein were made, absent evidence to the contrary. We advise the Applicants of the obligations under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for us to consider the applicability of potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103.

Claims 17 to 29, insofar as in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 103 as being unpatentable over considerations of Blanchard '785 and '265, presently cited and provided. In an alternative embodiment illustrated in Figure 10 Blanchard '785 augments a P-minus-type body region with a P-plus-type region (37) for the expressed reason to alter electrical breakdown characteristics, discussed in Blanchard '265, over breakdown characteristics of the device illustrated in Figure 3. Discerning that Blanchard expected to form a trench DMOS transistor cell whereby a maximum depth of region (37) exceeds that of trench groove (31) and of P-minus-type body layer whereby a distance between the trench groove and region (37) exceeds a distance between the trench groove and an interposed P-minus-type body layer, we conclude it to have been obvious for one to have recognized therefrom the Invention claimed.

Pending Claim 17 is further rejected under the judicially established doctrine of obviousness-type double patenting as being unpatentable over Claim 2 of US 5,072,266 but further considered with Blanchard '785 teaching that a maximum depth of the augmented body exceeds a depth of an unaugmented body, the only depth relationship not defined in Patent Claim 2 that nevertheless would have been obvious over Blanchard '785 because Blanchard essentially teaches an embodiment obviously similar to that patented.

The double patenting rejection, based upon public policy, is intended to prevent prolongation of the patent term by prohibiting claims in a second patent not patentably distinct from claims in a first patent, after In re Vogel, 164 USPQ 619 (CCPA 1970). A timely filed terminal disclaimer in compliance with 37 C.F.R. 1.312(b) would overcome this ground of rejection if the present Application and the Patent are shown to be commonly owned, after 37 C.F.R. 1.78(d).

We reject all claims.

We set a period for response of three months from the date of this Office action.

An inquiry concerning this communication may be directed to Examiner J. Carroll at telephone number 703-308-4926, or to the Group 2500 Receptionist at telephone number 703-308-0956.

Respectfully Submitted.

JAMES J. CARROLL
EXAMINER
ART UNIT 253